

Program Name Physics

Program Mission The mission of the Department of Physics and Electrical Engineering is to provide comprehensive undergraduate degree programs in Physics, Electrical Engineering, Computer Engineering, Biophysics, and Engineering Management. The department is committed to providing an environment in which our students attain the knowledge and skills to contribute to, and thrive in, their chosen profession. This environment includes a full spectrum of courses, providing a framework and foundation, research and internship opportunities to foster the application and expansion of knowledge and skills, mentoring and advising to promote personal and intellectual growth and opportunities to reach out to the local and regional community to reinforce a commitment to ethical, professional and socially conscientious practices. The Department of Physics and Electrical Engineering seeks to support the overall mission of The University of Scranton and the College of Arts and Sciences to provide a transformative educational experience for our students firmly rooted in the Jesuit intellectual tradition.

Referring to your annual assessment reports, please reflect on and report any changes or improvements you have made to your program as a result of evidence you have gathered

Curriculum

The curriculum provides more than one opportunity for students to meet the Program Learning Objectives

Which key courses and assignments does the program use to ensure that students are meeting these program learning outcomes?

Key Courses: PHYS 140/140L, PHYS 141/141L, PHYS 150, PHYS 270/270L, ENGR 253L, PHYS 333, PHYS 350, PHYS 352, PHYS 371, PHYS 372, PHYS 447, PHYS 448/448L, PHYS 473/473L, PHYS 494, PHYS 494. Electives including: PHYS 255, PHYS 360, PHYS 404, PHYS 460, EE 241. Assignments: Tests and quizzes questions, lab and research reports, oral presentations, and course exit surveys.

Program Learning Outcomes to be Assessed

Program Physics

Program Learning Outcome

PLO7. Produce and defend a thesis, based upon an original or continuing research project by the end of the physics program.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics**Program Learning Outcome**

PLO1. Identify and explain basic physical principles, quantities, and laws in several basic and applied fields of physics.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Aggregate scores on embedded questions; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio, Embedded Exam Questions.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics**Program Learning Outcome**

PLO2. Apply the knowledge of mathematics and physics.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Aggregate scores on embedded questions; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio, Embedded exam questions.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics**Program Learning Outcome**

PLO3. Analyze and evaluate physical systems using problem-solving skills in several basic and applied fields of physics.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Aggregate scores on embedded questions; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Embedded Exam Questions.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics**Program Learning Outcome**

PLO4. Design and conduct experiments, analyze and interpret data, and formulate conclusions.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics**Program Learning Outcome**

PLO5. Calculate, estimate, assess experiment uncertainty and compare experimental outcomes to theoretical predictions.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Aggregate scores on embedded questions; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio, Embedded Exam Questions.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics**Program Learning Outcome**

PLO6. Communicate effectively orally and in writing.

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Rubric to score samples of student lab/research reports; Course exit survey.

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Department files stored in LSC 235.

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

Both direct and indirect.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Rubrics, Portfolio.

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

TBD

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.

Program Physics

Program Learning Outcome

How will you collect and analyze the evidence that students are meeting the PLO (e.g. Review aggregate scores on embedded questions; review scores on standardized tests; use a rubric to score samples of student writing).

Where in the program does the evidence reside? Evidence can reside in a particular course, sections of a particular course, or outside of courses (e.g. survey of graduates)

Is the evidence direct or indirect Direct evidence is actual student outputs, which can be analyzed or aggregated using quantitative or qualitative methods. Indirect is secondary information, such as perceptions, attitudes, or self-ratings.

What tools are necessary to collect evidence? (Rubrics, Portfolio, Embedded Exam Questions etc.)

Are there benchmarks that you will use to interpret your results? Benchmarks are associated with quantitative evidence and can be determined based on disciplinary norms or previous results on the same assignment, survey, etc.